The Maryland Fruit Grower

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Edited by the Secretary, A. F. Vierheller, Extension Horticulturist

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PEACH BORER CONTROL

It has been a long time since we laid on a sack of straw under a peach tree and dug out borers with a knife. Often we did more damage than the borers would have done. With the development of para-di-chloro-benzene crystal-gas treatment, much of the risk of tree loss was removed from the peach growing industry. However, it was found that this treatment was not without its faults. Some growers placed the crystals too close to the tree trunks, or else carelessly threw the mounding soil toward the tree, pushing the crystals against the trunks, causing either damage or loss of the tree. There were actual cases where entire orchards went out even though they were gassed annually. It was found that in preparation of the soil before the crystals were placed, too much soil was removed, placing the gas crystals below the borers. Being heavier than air, the gas fumes did not reach the borers working above the level of the crystals.

Then came the use of paradichlorobenzene crystals dissolved in cotton-seed oil. This method was described fully in the September, 1936, Maryland Fruit Grower, but a review may be in order. Dr. O. I. Snapp of U. S. Field Laboratory, Fort Valley, Georgia, found that by making a stock solution of cotton-seed oil, fish-oil soap and p-d-benzene crystals, then diluting this solution, it could be used with safety on any aged peach tree, and killed, not only larvae, but eggs, also. The stock solution was composed of cotton-seed oil and high grade potash fish-oil soap, slightly warmed (not above 70°-80° F.) in which the crystals were dissolved.

The method required considerable care and remixing, in case free oil remained after the crystals were dissolved. This solution was then diluted according to the age of trees on which it was to be used, and the trees received a certain amount of the solution according to age, so that each age of tree would receive a certain amount of actual p-d-benzene ranging from ⅛ ounce on trees 1 to 2 years old to ¾ ounce on trees 6 years or older.

S. C. Chandler reporting in August 1936, Journal of Economic Entomology (Vol. 29: No. 4) showed good results in borer control where the p-d-benzene crystals were dissolved in soybean oil, Dentrol or Scalecide. These mixtures gave results of over 96% kill of borers in 2 and 3 seasons' trials. Some Maryland growers using the treatment have gone to the Scalecide-crystal mixture.

In order to get a certain actual amount of p-d-benzene applied in the oil mixture, a measuring device was perfected, the material being placed in the spray tank and run through the spray hose into the measuring tube, so that any specific amount of the oil-crystal mixture could be applied per tree. These measuring devices are manufactured by H. H. Weisel, Milford Square, Pa., and Anthione Machine Works, Fort Valley, Ga. A modified form is made by B. G. Pratt Co., New York, N. Y.

In March, 1938, Dr. O. I. Snapp reported another treatment for peach borer control*. This is composed of a mixture of ethylene dichloride and potash fish-oil soap. Ethylene dichloride is a colorless liquid with an odor like chloroform. It is only slightly soluble in water and burns with difficulty whe ignited by a lighted match. If breathed in high concentration it has an anaesthetic action, but if not breathed in any great quantity no harmful results will come from working with this compound.

In a personal letter from Dr. Snapp, he stated that the report of the use of this material was based on six years' experimentation at the Fort Valley Station, and in the report, it is stated that the work was also carried on cooperatively in southern Illinois and western New York by entomologists of the Experiment Stations of these States, also of the Illinois Natural History Survey. Dr. Snapp also stated that ethylene dichloride could be purchased from Carbide and Chemicals Corporation, New York, and E. I. duPont de Nemours & Co., Inc., Wilmington, Del. B. G. Pratt Co., New York, have written that they handle this material. Potash fish-oil soap may be obtained from Crystal Soap Co., and James Good, Inc., both of Philadelphia.

The prepared emulsion ready for use will be available from General Chemical Co. and Carbide and Carbon Chemicals Co., both of New York; McKenzie Chemical Co., Montezuma, Georgia; Fred Durand, Woodbury, Georgia, and J. W. Woolfolk Co., Fort Valley, Georgia.

The main points to be observed in use of the ethylene dichloride emulsion are to have it really emulsified before using and also not to use too much.

Full directions for preparation and use are reprinted from the report:

Preparing Ethylene Dichloride Emulsion

"To avoid concentration of the vapor and any prolonged breathing of it, the emulsion should be prepared out of doors or in a well-ventilated room. It is desirable that the air temperature be between 50° and 80° F. Since the compound boils at temperatures below the boiling point of water, heat should not be employed in making the emulsion, and the liquid should be kept away from fire and open-flame lights. The emulsion may be prepared cold by stirring 9 parts by volume of ethylene dichloride into 1 part of volume of potash fish-oil soap. A good grade of potash fish-oil soap should be used, that is, one without an excess of caustic potash and containing approximately 30 percent of soap and 70 percent of water. To make the emulsion, place 1 part of potash fish-oil soap in a container and add slowly at intervals 9 parts of ethylene dichloride, stirring constantly. When the fish-oil soap and ethylene dichloride are thoroughly emulsified, add water slowly with constant stirring until the emulsion measures 2 parts for each part of ethylene dichloride used. For example, if 18 gallons of the emulsion are desired, start with 1 gallon of potash fish-oil soap, to which add slowly at intervals, with constant stirring, 9 gallons of the ethylene dichloride liquid. Then add water, as directed, until the total quantity of the emulsion measures 18 gallons. This is the stock emulsion and contains *50 percent of ethylene dichloride*. The stock emulsion is diluted with water before use, the amount of dilution depending upon the age of the tree and the dosage required, to be discussed later.

If the stock emulsion breaks down after preparation, this will be indicated by the appearance of globules of ethylene dichloride, and the material

* "Ethylene Dichloride Emulsion for the Control of the Peach Borer." Oliver I. Snapp, Division of Fruit Insect Investigations, Mimeo. Circular E-424. Published by Bureau of Entomology and Plant Quarantine, U. S. Dept. of Agriculture, Washington, D. C.

Fertilize Your FRUIT TREES

THIS FALL WITH NON-LEACHING

Granular 'Aero' Cyanamid

FALL APPLICATION of Granular AERO Cyanamid has the advantage of getting the job out of the way of Spring work. Moreover, in the Spring unfavorable weather may interfere with applying the nitrogen early enough to produce the best results.

Granular AERO Cyanamid does not leach. Tree roots absorb it and store it up for use in the Spring.

Play safe! Apply Granular AERO Cyanamid to your orchard this Fall, while you still have plenty of help and good weather.

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must be re-emulsified. This is done by pumping the material from one container to another or back into the same container, or by starting over again with a small quantity of potash fish-oil soap to which small quantities of the broken emulsion are added slowly at intervals with constant stirring.

Dilution and Dosage

Table I gives the quantity of water to be added to the *50-percent* stock solution of ethylene dichloride to get 10 gallons of diluted emulsion of the different strengths and the dosages found by experiment to be most satisfactory for use on peach trees of various ages in the localities where the experiments have been carried on.

Dilution of stock emulsion, strength of diluted emulsion, and dosage applied to trees of different ages.

Age and size of trees	Quantity of water and of stock emulsion to use to get 10 gallons of diluted emulsion at the strength used in the tests		Strength of the diluted emulsion	Dosage of the diluted emulsion for each tree
	Water	50 per cent stock emulsion		
	Gallons	Gallons	percent	
Six years and older (average size and larger trees)	5	5	25	½ pint
Six years and older (small size trees)	6	4	20	½ pint
Four and five years	6	4	20	½ pint
Three years	7	3	15	½ pint
Two years	7	3	15	¼ pint
One year	8½	1½	7½	⅛ pint

When and How to Apply the Emulsion

Ethylene dichloride emulsion can be applied for the control of the peach borer any time during the fall or spring, and in the South applications made during the winter will give good results. Best results will probably be obtained in the fall at the end of the egg-laying period of the peach borer moths, when most of the borers are small.

The emulsion can be applied either by spraying or pouring. The quantity should be regulated rather closely, since the applications much in excess of the recommended dosage may cause tree injury. Applications are made by wetting the soil immediately surrounding the tree, and the lower part of the trunk should receive some of the material during treatment. No preparation of the soil before treatment is necessary on loose, level ground. In some cases, however, cupping the soil slightly toward the tree trunk to prevent the liquid from running off, or loosening the soil around the tree sufficiently to permit the liquid to be readily absorbed, will give better results. Several shovelfuls of soil should be placed against the trunk of the tree after treatment to prevent surface loss of the fumigant. The treatment requires no later attention.

A tin household measuring cup holding one-half pint, with marks for one-eighth and one-fourth pint, will be found useful if the ethylene dichloride emulsion is to be applied by pouring around the tree. A bucket pump or a

power sprayer can be employed for applying the material as a spray. With a little practice the quantity applied with a bucket spray pump can be regulated without difficulty.

A device for regulating under ressure the quantity of spray used on each unit treated has been developed by the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture. Information on this device may obtained upon applicaiton."

From Maryland, we have a statement by Dr. E. N. Cory, State Entomologist, as follows: "Maryland peach growers should be prepared for fall treatment of trees with paradichlorobenzene for the control of the peach tree borer. This should be an annual practice. Where neglected, the peach tree borer usually increases in numbers rapidly and does major damage. It will take 1 ounce of paradichlorobenzene for the average tree. The surface weeds should be scraped away and the paradichlorobenzene placed in a circle on the ground around the tree, and the ground mounded up. This mound should be left over winter if that seems to be desirable."

Borers are best treated in Western Maryland in latter September and on Eastern Shore in early October. Trees under 5 years of age should receive fractional dosage under one ounce of p-d-benzene crystals if this material is used, and from 5 years old and up, use 1 ounce per tree. If p-d-benzene and oil mixture is used, enough of the mixture should be applied per tree to really get about the same amounts of p-d-benzene per tree.

None of these treatments are to be used carelessly. Too much material per tree is as bad as not enough per tree. Now we have three methods of borer control. No matter which one is used, the object should be to stop the borer. There is a new crop of these pests every year, so it may be dangerous to put off the treatment until next year or even next spring.

Remember our advertisers

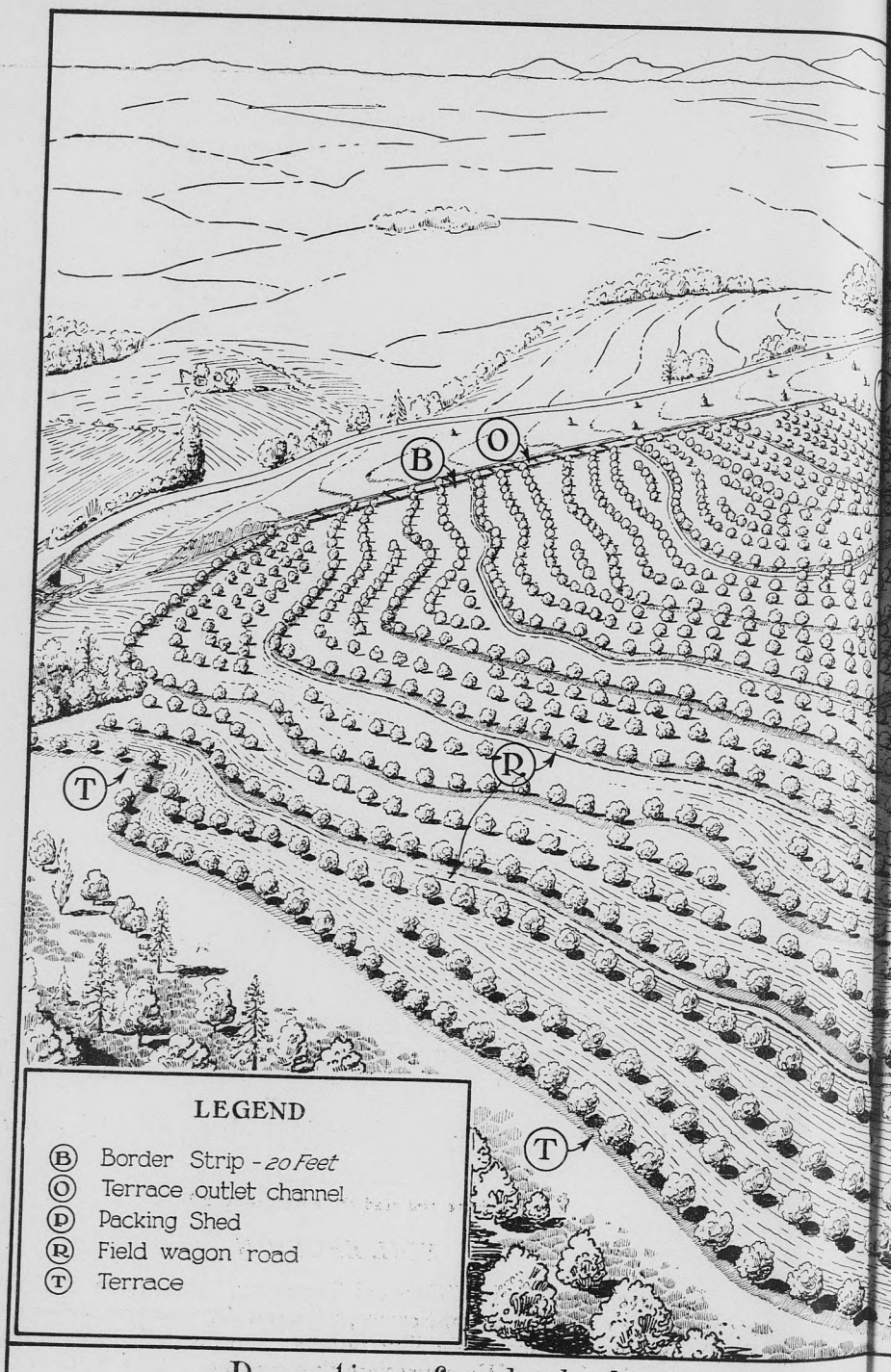
APPLE PRODUCTION

In "The Fruit Situation," August 26, 1938, issued by U. S. Bureau of Agricultural Economics, the 1938 apple crop estimate for the United States was given as 134,867,000 bushels as compared with 210,673,000 bushels in 1937. The 1938 crop was considered as 89.5% of average and 64.0% of the 1937 crop. It was interesting to note that only Delaware, Maryland, and New Jersey were showing a crop above the average (14-22%). The rest of the principal apple producing States ranged from 82.9 to 98.4% of average, with the exception of Ohio 66.1%; Missouri 17.8% and Arkansas 24.2%.

Have you read the advertisements?

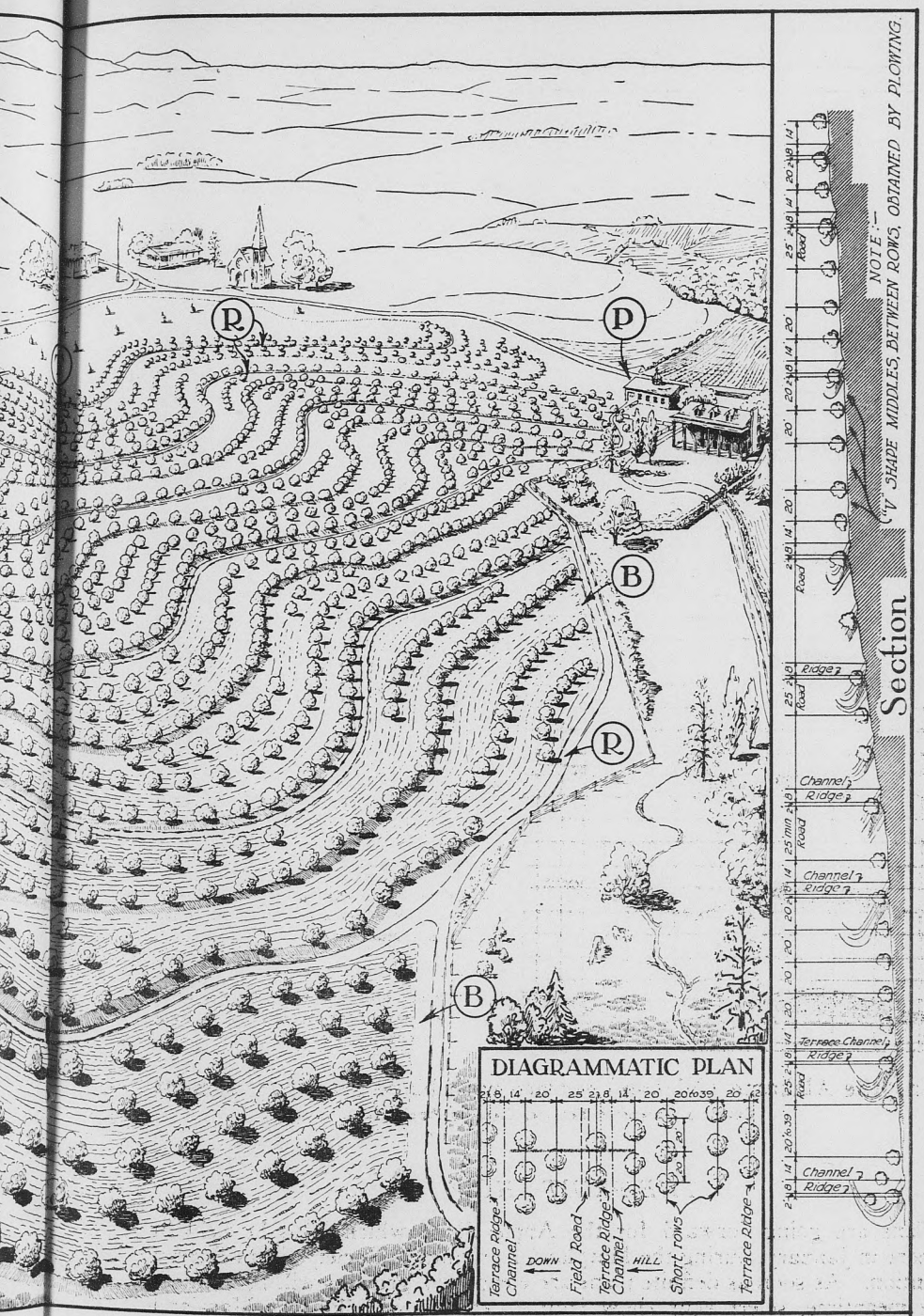
SOIL EROSION

An excellent bulletin, "Orchard Terracing," Extension Bulletin 97, has been issued by the Extension Service, Clemson Agricultural College, Clemson, South Carolina. Some of the illustrations from the bulletin have been loaned for use in this issue. We appreciate this courtesy. The bulletin is of great interest to growers considering the terracing of orchard land, and contains many fine illustrations. Maryland growers who have not visited the terraced orchards of Gardenhour Brothers, Smithsburg, should do so.



Perspective of orchard showing terraces. row arran

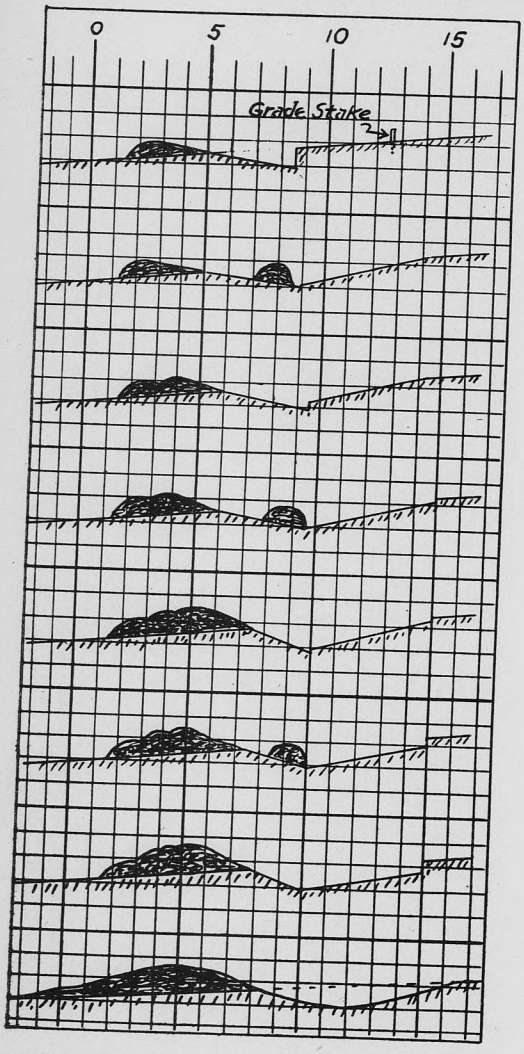
Detailed illustration showing terraces, wagon roads, placing of tree rows, terrace outlet channel, and



es. row arrangement, and wagon roads.

outlet channel, and border strips.

Courtesy Extension Service—Clemson Agricultural College



First cut, 4 feet below stake throwing dirt down hill.

Second cut, sloping upper side of ditch, throwing dirt into ditch.

Third cut, cleaning ditch and cutting additional depth.

Fourth cut, sloping upper side of ditch, throwing dirt into ditch.

Fifth, cleaning ditch and cutting additional depth.

Sixth, sloping upper side of ditch and throwing dirt into ditch.

Seventh, cleaning out ditch—the completed terrace. Channel is on grade stake line.

Cross section of same terrace after two years maintenance with two-horse turn plow.

Building the Alabama (Nichols) terrace with blade grader equipment

Courtesy Extension Service, Clemson Agricultural College

THE FRUIT SHOW

Plans are going forward for the Apple Show which is to be held in Baltimore in January, during the Maryland Agricultural Society-Farm Bureau Convention. As soon as definite plans are completed, growers will be notified. In the meantime, select your show fruit. Let's show folks that Maryland produces excellent apples.

The Annual Meeting—Frederick, January 4-5, 1939

The Fruit Show—Baltimore, January 11-12-13, 1939

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"Dat's de stuff," says Uncle Natchel

MORE NEWS ABOUT BRUISE

For several States, even as far away as Kansas and New York, inquiries have come as to what we are doing in Maryland to reduce the bruising of fruit. Evidently, this problem is serious in other apple growing sections. Other fruits are coming into market, less banged up than are apples. However, it must be said that peaches looked much better this year, when they were opened for sale, after their trip to market. One grower wrote that he had seen a sign in a market which read,—"Our peaches are lovely things, but don't squeeze them until they are yours." Possibly the little boy had some idea of the evils of bruising when he carried the kittens by their tails, and told his mother that he was careful to carry the kittens by their "stems" so as not to hurt them.

In September, 1938 "Hoosier Horticulture," Prof. C. L. Burkholder, who manages Purdue Orchards, wrote under the caption—"Apples Have Tender Feelings—Don't Bruise Them." He offered the following suggestions:

"High winds and hail storms have ruined hundreds of bushels of fancy apples in Indiana in the past few months, but these are weather hazards over which the grower has no control. Still other hundreds of fancy fruit will be ruined by careless picking and packing practices—for which the picking boss and packing shed manager are responsible! Let's list a few of the most common insults to which Indiana apples are annually exposed.

1. Poor picking bosses who fail to give proper supervision to their crews. Select the best man available for this important post and one that will keep moving and checking up constantly on rough handling practices.

2. Use picking buckets or padded baskets with hooks—especially for tender varieties such as McIntosh and Grimes.

3. Avoid dropping fruit into the tops of any type of picking container used—it takes no longer to lay the fruit into the container. In case of picking bags, many pickers lean on the bag and bump the fruit on the rungs of the ladder.

4. Teach the picker that it isn't necessary to grip an apple so hard that it leaves four finger prints on it just in order to snap it off the spur. Canvas gloves help out this type of injury but are really not necessary and cut down on picking speed.

5. Listen to your pickers dump their picking bags and buckets—this is a common source of serious injury and all the fault of the picking boss.

6. Give your picking boss authority to fire pickers who do not respond to suggestions and instructions.

7. Use crates to haul fruit from orchard to shed if possible and avoid nail and rim cuts that come from using bushel baskets.

8. After the fruit gets to the packing shed see that the sorting crew removes all long finger nails before handling your fruit.

9. Have a supply of sponge rubber on hand. Tack on a strip wherever it will prevent hard knocks. Sponge rubber retains its resilience! Many types of sizers cannot be operated above a certain definite speed without punishing the fruit. The packing crews must move fruit rapidly but softly.

10. Apples cannot be dumped directly from the bins into the bottom of the baskets. Use aprons to lower the first fruit into the package. Break the fall with the left hand as the remainder is raked out of the bin.

11. The packing shed boss must be continually on the alert to see that each package is properly shook down as it is being filled and "bridges" around

the outer circumference leveled out to prevent "drop faces" when the package reaches market.

12. Baskets should be turned smoothly and not slammed over with a "bang." The average packing crew must be taught to respect the feelings of the fruit you have toiled all summer to perfect. Those who will not heed and follow instructions must be shifted to some other type of work or be replaced. The picking boss and the packing shed manager are very important cogs in your harvest organization and you can well afford to pay a premium for men who will have some sympathy for the feelings of your apples."

These suggestions apply equally well in Maryland and are offered to Maryland growers for consideration. There are still some packing house signs available, regarding bruising. Write A. F. Vierheller, College Park, for as many as you need in the packing house. Maryland apples are going to move into a lot of different markets, this year, and here is a chance to establish a reputation for nicely-packed, unbruised fruit.

Have you read the advertisements?

CAN WE ASSIST YOU?

This organization lends money to sound fruit growers to finance the production of their crops—to pay cash for their purchases and save the discount. The interest rate is 5%, for the time the money is actually used. We serve growers in Virginia, West Virginia, Maryland, Pennsylvania and Delaware. Perhaps we can assist you.

East Central
Fruit Growers Production Credit Association
Hagerstown, Md.

APPLE EXPORTS

"Foreign Crops and Markets," August 6, 1938, issued by U. S. Bureau of Agricultural Economics, reported that fresh apple exports from the United States in 1937-38 season were 19,957,000 bushels as compared to 6,755,000 bushels in 1936-37. Of the total 1937-38 exports, 7,507,000 bushels were in boxes, 2,666,000 in barrels, and 784,000 in baskets. Principal export points were (bushels): United Kingdom, 4,295,395; France, 1,556,047; Belgium, 937,573; Netherlands, 921,326; Germany, 787,832; Sweden, 361,633; Other Europe, 326,809; Total Europe, 9,186,615; Canada, 313,672; Egypt 216,613; Palestine 204,959; Brazil 139,666; Others 896,005.

Remember our advertisers

The preacher had finished a sermon on the duties of wives to mother their husbands. "I want every woman who will go home and mother her husband to stand up," he cried. A little woman, slightly deaf, stood up. "Ah, there is one woman who will go home and mother her husband," cried the preacher. "Mother him? My land, I thought you said to smother him."

SPRAY for

Peach Borers!

Spray with Scalecide and Paradichlorbenzene Early This Fall

This combination is one of the safest and most economical peach borer controls. It saves labor, as no preparation of the ground is necessary, and it is not necessary to remove the mounds. Do not wait until it is too late. The best time is before the ground temperature is colder than 60 degrees. One gallon of Scalecide and paradichloridebenzene will treat 40 to 50 full grown peach trees.

Dissolve 1 to 2 pounds of paradichlorbenzene in 1 gallon of Scalecide. Dilute this with 7 gallons of water. Spray the base of the trees and mound as you would for the crystal method.

We can supply you with Scalecide containing paradichlorbenzene at the cost of the two materials, or you may dissolve your own. Let us quote you.

You will find this the simplest and most inexpensive peach borer control available. Write for new folder "Peach Trees Need Scalecide."

Growers wishing to use the new ethylene-dichloride method should write for quotation.

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